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P352 -The utility of magnetic resonance native T1 mapping for renal tissue characterisation in patients with IgA Nephropathy

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Introduction
IgA nephropathy (IgAN) is the commonest glomerulonephritis in the western world. Degree of interstitial fibrosis, tubular atrophy and glomerulosclerosis are powerful predictors of progression of chronic kidney disease (CKD), but renal biopsy is prone to sampling error and not without risk and complication. A non-invasive assessment of global degree of fibrosis or disease activity in patients with IgAN are desirable. We assessed the utility and reproducibiltiy of non-contrast, magnetic reonance native T1 mapping in patients with IgAN compared to controls for the assessment of renal disease and degree of fibrosis.

Methods
20 patients with biopsy proven IgAN and 10 healthy control subjects underwent non-contrast magentic resonance imaging with axial and coronal native T1 mapping of both kidneys. 10 patients with IgAN underwent idnetical test-retest reproducibility scans within 7 days to assess the reproducibility of native T1 mapping for patients with IgAN. For patients with IgAN, native T times were compared to degree of fibrosis on renal biopsy and clinical markers of disease severity including eGFR, rate of eGFR decline and degree of proteinuria.

Results
Cortical native T1 times were significantly longer in patients with IgAN compared to control subjects (1540 ms±110ms versus 1446±88ms for controls, p = 0.038). There were significant correlations between cortical coronal native T1 time and eGFR and native T1 and proteinuria (r = -0.444, p = 0.016; r = 0.533, p = 0.003 respectively). Patients with IgAN who had an eGFR decline of greater than 2ml/min over the preceding 24 months had increased cortical native T1 time compared to IgAN patients with an eGFR decline of less than 2ml/min over the preceding 24 months (1516±87ms versus 1615±135ms, p=0.068). Mean cortical native T1 time was reduced in patients with a histological 'T'-score of 0, compared to patients with a histological 'T'-score of greater than 0, though not to statistical significance (1496±105ms versus 1575±106ms, p=0.131). Test-retest reproducibility of native T1 mapping in patients with IgAN was outstanding with coefficient of variability for axial and coronal images of 2.9% and 3.68% respectively.

Conclusions
Renal cortical native T1 is significantly increased in patients with IgAN compared to matched controls and correlates with markers of renal disease, with trends towards association with degree of fibrosis on renal biopsy. The test-retest reproducibility of cortical native T1 mapping is excellent. Future studies in patients with IgAN should seek to track changes in native T1 over time, with associated histological validation.